



THE UNITED STATES' EXPERIENCE

**TITLE:**  
**ADVANCED MANUFACTURING AND PROTOTYPE CENTER OF EAST  
TENNESSEE**

**GENERAL INFORMATION**

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**Country:** United States of America

**Coordinating Institution:** Technology 2020 (Tech2020)

**Other institutions involved:** 1) Oak Ridge National Laboratory, 2) University of Tennessee, Center for Industrial Services, and 3) Pellissippi State Community College

**Duration of the experience:** October 2013 – September 2015; DOE portion of the grant is not over until December 31, 2015.

**Webpage:** [www.amptn.com](http://www.amptn.com); [www.ramptn.com](http://www.ramptn.com)



THE  
Advanced Manufacturing  
& Prototyping Center  
OF EAST TENNESSEE

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**1) Objectives**

The AMP! Project is a result of a multi-governmental agency award with four partners: Technology 2020 (Tech2020), University of Tennessee Center for Industrial Services (UT-CIS), Pellissippi State Community College (PSCC), and the Oak Ridge National Laboratory (ORNL). At the core of the AMP! Project are three primary areas of focus:

- Connecting resources and encouraging collaboration,
- Developing a workforce that drives innovation and expands entrepreneurship, and

- Innovating and improving processes and technologies.

AMP! is providing leadership, and it has become the mechanism that connects colleges with industry, students with mentors, industries with entrepreneurs, a Federal laboratory with private industry, and suppliers with manufacturers. College students are able to develop their education in advanced manufacturing. Companies in distressed and underemployed counties have access to state of the art research and development facilities. This project has brought together students, researchers, companies, and employees to accelerate job growth and development in the region. These collaborations are cemented by the collective drive to develop solutions to real world problems, and expand the advanced manufacturing cluster throughout the AMP! region. This initiative has created a new paradigm centered on collaboration and sustainability in advanced manufacturing.

## 2) Relevance

The following areas substantiate the consequence and efficacy of the AMP grant:

- Partnerships - getting manufacturers to work together; work with workforce development resources; work with research institutions
- Projects – utilizing assets and creating collaborations that have helped multiple companies grow their businesses
- New Businesses – developing markets and fostering entrepreneurship to assist in the creation of small businesses
- Access – Helping manufacturers and start-ups understand the resources that are out there and available
- Education – creating an environment that improves learning opportunities of students and alignment of those programs with the needs of businesses

In addition, the consequences of the AMP! project have endorsed Tech2020 to receive in October 2013 an Investing in Manufacturing Communities Partnership (IMCP) planning grant from EDA. Additionally, in May 2014, East Tennessee, as part of the 69-county Tennessee Valley region, was designated a Manufacturing Community by the EDA for its DRIVE initiative that will accelerate the development of a strong and growing automotive cluster in the Tennessee Valley. This DRIVE consortium (which include Tech2020's partners in the AMP! grant, UT-CIS, Pellissippi State Community College, and ORNL) will increase capital investment in the region's automotive supply chain and escalate the advanced manufacturing cluster.

### 3) Concrete activities and actions

For the EDA portion of the grant, Tech2020 is providing cluster leadership; managing TNFIRST and the FIRST Robotics Student Competition in Knoxville; and managing Innovation Challenge, whereby engineering students at PSCC solve advanced manufacturing problems. Tech2020 uses the SBA portion of the grant to run three boot camps for ten small manufacturers in three distressed counties in the AMP! service area. For the DOE portion of the grant, Tech2020 has created a network of regional manufacturers participating in the AMP! initiatives. This network, named RAMP (Regional Advanced Manufacturing Partnership) already has provided five quarterly meetings to more than 400 people. RAMP is creating a sustainable, high-performing advanced manufacturing industry cluster in East Tennessee, where manufacturers from disparate disciplines collaborate to develop and apply innovative technology to their existing operations; develop and foster a reliable, mature supply chain in the region; and develop and retain a properly trained next-generation workforce.

With the DOE grant, Tech2020 is involved in working with over 100 advanced manufacturing projects and creating a prototype center. Through the DOL/ETA grant, PSCC has enhanced its manufacturing curricula, has created a certificate for additive manufacturing, recruited additional faculty and advanced manufacturing students, and will facilitate their employment placement after graduation. The UT-CIS grant from NIST provides market intelligence, industry trends, and data about advanced manufacturing to support planning and strategy development for the cluster. In addition, UT-CIS is providing technical assistance, supplier development, sustainability strategy, exporting, and mapping the advanced manufacturing cluster in the AMP! service area.

### 4) Achievements and results

Cluster leadership, the creation of RAMP, TNFIRST, FIRST Robotics school competition, advanced manufacturing projects, the new additive manufacturing certificate, and job creation are the most relevant results achieved. With cluster leadership, we have kept the grant partners involved in every aspect of the AMP! mission. We have created a sustainable consortium of manufacturers, the Regional Advanced Manufacturing Partnership (RAMP). We coordinated the Smoky Mountains Regional FIRST Robotics competition, which ran from Thursday, March 27 to Saturday, March 29, 2014 at the Knoxville Convention Center in downtown Knoxville. High schools in the AMP! region won multiple awards. Hardin Valley Academy won the Industrial Safety and Industrial Design awards. Knoxville Catholic High won the Excellence in Engineering award, and Halls High won the Creativity Award. Finally, 279 volunteers, which included principals, mentors, parents, students, judges, builders, and support staff, provided more 14,117 hours for the entire Regional competition. Fifty (50) teams participated from seven (7) states, Pellissippi state has added new faculty and recruited new students for the additive manufacturing certificate. Tech2020 and ORNL have worked on at least 154 manufacturing projects. Our efforts have helped to create at least 15 new small businesses and 33 new jobs.

## 5) Sustainability

Tech2020 has created three different vehicles for continued cluster sustainability in preparation for the grant ending in December 2015. For the Economic Development Agency (EDA) Tech2020 will continue with TNFIRST. For the Department of Energy (DOE) Tech2020 will continue with RAMP and the Prototype Center. As part of its mission under the DOE funding, the Prototype Center has been assisting regional manufacturers with manufacturing projects that will help grow and strengthen the manufacturing base throughout the RAMP region. In the beginning, this support was limited primarily to the existing service support provided by UTCIS and Tech2020, as well as through various contracting mechanisms with ORNL between regional manufacturers and in other value-added means as outlined under the Missions of RAMP. Funding for RAMP will come from membership and other grant sources.

In Q4 2013, Tech2020 received a grant from the Appalachian Regional Commission (ARC) to provide funding for the development of prototypes and advanced solutions to small business manufacturing in Appalachia Tennessee. This funding provided mechanisms for AMP! to help offset costs for regional manufacturing small businesses to help solve manufacturing challenges and/or assist with getting product to market.

## 6) Lessons learned

We would repeat the collaboration with our partners. However, this strong alliance would not be possible and intact however, without strong cluster leadership. Our strong cluster leadership with monthly project meetings, advisory committee meetings for AMP! and monthly steering committee meetings with RAMP continue to enforce the partnering environment for all local agencies to integrate the region's strengths and unique assets. Our partnerships with our education partners are improving industry relevant education and training to prepare the region's workforce to meet the needs of advanced manufacturing. Our efforts have increased access to ORNL, university and MEP resources, access to capital for process improvements, and enhanced communication and connections within the supply chain. Above all else, the most important lesson learned is to have an unrelenting focus upon providing value-added services to manufacturers.

## 7) Capacity for the exchange of this experience

Cooperation modality	Cooperation modalities the institution can provide to others
Information Sharing	X
Conference Calls	X
Workshops	X
Technical and Experts Visits	X

## 8) Author of this story

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## 9) Key persons involved in the design, implementation, and evaluation of the experience

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